

REMARKS

Initially, Applicants would like to express appreciation to the Examiner for the detailed Final Official Action provided.

Upon entry of the above amendment, claims 13, 14, 18, 21, 25, and 27 will have been amended; and claims 15, 22, and 28 will have been canceled. Accordingly, claims 13, 14, 16-21, 23-27, 29, and 30 are currently pending. Applicants respectfully request reconsideration of the outstanding rejections and allowance of claims 13, 14, 16-21, 23-27, 29, and 30 in the present application. Such action is respectfully requested and is now believed to be appropriate and proper.

Claims 13, 18, and 25 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over TAKESHITA et al. (U.S. Patent Appl. Pub. No. 2005/0112415) in view of WANG et al. (U.S. Patent Appl. Pub. No. 2004/0251872).

Although Applicants do not necessarily agree with the Examiner's rejection of claims 13, 18, and 25 on this ground, nevertheless, Applicants have amended independent claims 13, 18, and 25 to clearly obviate the above noted ground of rejection in order to expedite prosecution of the present application. In this regard, Applicants note that TAKESHITA et al. and WANG et al. fail to teach or suggest the subject matter claimed in amended claims 13, 18, and 25.

Claim 13 has been amended to include the subject matter of dependent claim 15. In particular, claim 13, as amended, sets forth a battery pack including, inter alia, a battery, an end case with stepped attachment holes, screws, and a circuit substrate inside the end case, and "the battery case serves as an electrode terminal of one polarity and an electrode terminal of the other polarity is provided on the end face in the battery; a first connection bracket having an upright portion is secured to the end face of the battery case; a connection plate that makes surface contact with the

upright portion of the first connection bracket and that is partly connected to the circuit substrate is arranged on the inner side of one side wall of the end case; and the upright portion and the connection plate are welded together through an aperture formed in one side wall of the end case opposite the upright portion”.

Claim 18 has been amended to include the subject matter of claim 22. In particular, claim 18, as amended, sets forth a battery pack including, inter alia, a battery, an end case including stepped attachment holes, coupling pins, and a circuit substrate inside the end case, “the battery case serves as an electrode terminal of one polarity and an electrode terminal of the other polarity is provided on the end face in the battery; a first connection bracket having an upright portion is secured to the end face of the battery case; a connection plate that makes surface contact with the upright portion of the first connection bracket and that is partly connected to the circuit substrate is arranged on the inner side of one side wall of the end case; and the upright portion and the connection plate are welded together through an aperture formed in one side wall of the end case opposite the upright portion”.

Claim 25 has been amended to include the subject matter of claim 28. In particular, claim 25, as amended, sets forth a battery pack including, inter alia, a battery, an end case including stepped attachment holes, coupling pins, and a circuit substrate inside the end case, “the battery case serves as an electrode terminal of one polarity and an electrode terminal of the other polarity is provided on the end face in the battery; a first connection bracket having an upright portion is secured to the end face of the battery case; a connection plate that makes surface contact with the upright portion of the first connection bracket and that is partly connected to the circuit substrate is arranged on the inner side of one side wall of the end case; and the upright portion and the connection plate are welded together through an aperture formed in one side wall of the end case

opposite the upright portion”.

This amendment is fully supported by the specification, including the claims and drawings, and no prohibited new matter has been added. In particular, Applicants' claimed battery pack 10 includes a battery 1, an end case 6, a circuit substrate 5, and screws or coupling pins extending through stepped attachment holes 11 to securely attach the battery and the end case. Further, the battery includes electrical connection components. The battery case 2 is the positive electrode, and is connected to the circuit substrate 5 through a first connection bracket 13 and a connection plate 14. The first connection bracket 13 is attached to one end face of the battery by welding, and has an upright portion 13a on one side. The upright portion 13a extends in an upward direction and contacts the inner face of one side wall of the end case 6. See figure 3A. The connection plate 14 is positioned on the circuit substrate 5 and surface contacts the inner face of the upright portion 13a of the first connection bracket 13. A connection leg 14a fits in a connection notch 15 on one side of the circuit substrate 5, and is soldered to a connection electrode formed on the underside of the connection notch 15. The end case 6 includes a support wall 6b for supporting the connection plate 14 from inside. The end case 6 also includes an aperture 6a positioned in one side wall opposite the upright portion 13a. A pair of welding electrodes are pressed against the upright portion 13a of the first connection bracket through the aperture 13a and a welding current is applied across the electrodes, so that the upright portion 13a and the connection plate 14 are welded together to establish electrical connection. See particularly figure 3A; and pages 16-17 of Applicants' specification. Accordingly, Applicants' claimed invention includes advantages over the prior art including improved electrical connection.

The TAKESHITA et al. publication discloses a battery pack. However, as recognized by the

Examiner, TAKESHITA et al. fails to teach or suggest screws or coupling pins engaging the end face of the battery.

Further, the TAKESHITA et al. device includes a positive pole tab 45 having one end 45a connected by welding to a terminal portion 44 at an end of the circuit board, as described in paragraph [0070] and shown in figure 2 of TAKESHITA et al. However, the end 45a is folded over and extends in a parallel direction with the pole tab 45. Thus, the end 45a does not comprise an upright portion of the pole tab 45. Further, as shown in figure 2, the terminal portion 44 also extends in a direction parallel to the pole tab 45, and thus is not arranged in the inner side wall of the end case. Additionally, the TAKESHITA et al. device does not include an aperture formed in one side wall of the end case. Nor would it have been obvious to provide the TAKESHITA et al. device with an aperture in a side wall for welding since an aperture in a side wall would not provide access to the terminal portion 44 and the one end 45a for welding. In this regard, an aperture on the side wall could not provide access to the non-upright terminal portion 44 and one end 45a. Accordingly, the TAKSHITA et al. publication fails to teach or suggest the “the battery case serves as an electrode terminal of one polarity and an electrode terminal of the other polarity is provided on the end face in the battery; a first connection bracket having an upright portion is secured to the end face of the battery case; a connection plate that makes surface contact with the upright portion of the first connection bracket and that is partly connected to the circuit substrate is arranged on the inner side of one side wall of the end case; and the upright portion and the connection plate are welded together through an aperture formed in one side wall of the end case opposite the upright portion”, as set forth in amended claims 13, 18, and 25.

The WANG et al. publication is directed to a lithium ion battery. However, WANG et al. also fails to teach or suggest a first connection bracket having an upright portion, connection plate contacting the upright portion and arranged on one side wall of an end case, and an aperture in the side wall. Therefore, the WANG et al. publication fails to cure the deficiencies of the TAKESHITA et al. device, and even assuming, arguendo, that the teachings of TAKESHITA et al. and WANG et al. have been properly combined, Applicants' claimed battery pack would not have resulted from the combined teachings thereof.

Further, there is nothing in the cited prior art that would lead one of ordinary skill in the art to make the modification suggested by the Examiner in the rejection of claims 13, 18, and 25 under 35 U.S.C. § 103(a) over TAKESHITA et al. in view of WANG et al. Thus, the only reason to combine the teachings of TAKESHITA et al. and WANG et al. results from a review of Applicants' disclosure and the application of impermissible hindsight. Accordingly, the rejection of claims 13, 18, and 25 under 35 U.S.C. § 103(a) over TAKESHITA et al. in view of WANG et al. is improper for all the above reasons and withdrawal thereof is respectfully requested.

Claims 13, 17, 18, 24-26, and 30 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over TAKESHITA et al. (U.S. Patent Appl. Pub. No. 2005/0112415) in view of EHARA (U.S. Patent Appl. Pub. No. 2002/0142195).

Although Applicants do not necessarily agree with the Examiner's rejection of claims 13, 18, and 25 on this ground, nevertheless, Applicants have amended independent claims 13, 18, and 25 to clearly obviate the above noted ground of rejection in order to expedite prosecution of the present application. In this regard, Applicants note that TAKESHITA et al. and EHARA fail to teach or suggest the subject matter claimed in amended claims 13, 18, and 25.

Claim 13 has been amended to include the subject matter of dependent claim 15. In particular, claim 13, as amended, sets forth a battery pack including, inter alia, a battery, an end case with stepped attachment holes, screws, and a circuit substrate inside the end case, and “the battery case serves as an electrode terminal of one polarity and an electrode terminal of the other polarity is provided on the end face in the battery; a first connection bracket having an upright portion is secured to the end face of the battery case; a connection plate that makes surface contact with the upright portion of the first connection bracket and that is partly connected to the circuit substrate is arranged on the inner side of one side wall of the end case; and the upright portion and the connection plate are welded together through an aperture formed in one side wall of the end case opposite the upright portion”.

Claim 18 has been amended to include the subject matter of claim 22. In particular, claim 18, as amended, sets forth a battery pack including, inter alia, a battery, an end case including stepped attachment holes, coupling pins, and a circuit substrate inside the end case, “the battery case serves as an electrode terminal of one polarity and an electrode terminal of the other polarity is provided on the end face in the battery; a first connection bracket having an upright portion is secured to the end face of the battery case; a connection plate that makes surface contact with the upright portion of the first connection bracket and that is partly connected to the circuit substrate is arranged on the inner side of one side wall of the end case; and the upright portion and the connection plate are welded together through an aperture formed in one side wall of the end case opposite the upright portion”.

Claim 25 has been amended to include the subject matter of claim 28. In particular, claim 25, as amended, sets forth a battery pack including, inter alia, a battery, an end case including stepped attachment holed, coupling pins, and a circuit substrate inside the end case, “the battery case

serves as an electrode terminal of one polarity and an electrode terminal of the other polarity is provided on the end face in the battery; a first connection bracket having an upright portion is secured to the end face of the battery case; a connection plate that makes surface contact with the upright portion of the first connection bracket and that is partly connected to the circuit substrate is arranged on the inner side of one side wall of the end case; and the upright portion and the connection plate are welded together through an aperture formed in one side wall of the end case opposite the upright portion”.

This amendment is fully supported by the specification, including the claims and drawings, and no prohibited new matter has been added. As described above, in Applicants' claimed battery pack, the battery case 2 is the positive electrode, and is connected to the circuit substrate 5 through a first connection bracket 13 and a connection plate 14. The first connection bracket 13 is attached to one end face of the battery by welding, and has an upright portion 13a on one side. The upright portion 13a extends in an upward direction and contacts the inner face of one side wall of the end case 6. See figure 3A. The connection plate 14 is positioned on the circuit substrate 5 and surface contacts the inner face of the upright portion 13a of the first connection bracket 13. The end case 6 also includes an aperture 6a positioned in one side wall opposite the upright portion 13a, so that the upright portion 13a and the connection plate 14 can be welded together to establish electrical connection. See particularly figure 3A; and pages 16-17 of Applicants' specification. Accordingly, Applicants' claimed invention includes advantages over the prior art including improved electrical connection.

The TAKESHITA et al. publication discloses a battery pack. However, as recognized by the Examiner, TAKESHITA et al. fails to teach or suggest screws or coupling pins engaging the end face of the battery.

On page 8 of the Final Official Action, the Examiner has taken the position that the TAKESHITA et al. device includes a positive pole tab 45 having one end 45a connected by welding to a terminal portion 44 at an end of the circuit board. However, the end 45a is folded over and extends in a parallel direction with the pole tab 45. Thus, the end 45a does not comprise an upright portion of the pole tab 45. Further, as shown in figure 2, the terminal portion 44 also extends in a direction parallel to the pole tab 45, and thus is not arranged in the inner side wall of the end case.

Accordingly, the TAKSHITA et al. publication fails to teach or suggest the “the battery case serves as an electrode terminal of one polarity and an electrode terminal of the other polarity is provided on the end face in the battery; a first connection bracket having an upright portion is secured to the end face of the battery case; a connection plate that makes surface contact with the upright portion of the first connection bracket and that is partly connected to the circuit substrate is arranged on the inner side of one side wall of the end case; and the upright portion and the connection plate are welded together through an aperture formed in one side wall of the end case opposite the upright portion”, as set forth in amended claims 13, 18, and 25.

Further, on page 8 of the Final Official Action, the Examiner has taken the position that the EHARA device includes through holes in the end case for welding. However, the through holes 52 of the EHARA device are located on the top of the cover 41, and thus could not provide access to components configured such as the terminal portion 44 and the end 45a of the TAKESHITA et al. device. Moreover, it would not have been obvious to provide the TAKESHITA et al. device with an

aperture in a side wall for welding since an aperture in a side wall also would not provide access to the terminal portion 44 and the one end 45a for welding. In this regard, an aperture on the side wall could not provide access to the non-upright terminal portion 44 and one end 45a.

Therefore, the EHARA publication fails to cure the deficiencies of the TAKESHITA et al. device, and even assuming, arguendo, that the teachings of TAKESHITA et al. and EHARA have been properly combined, Applicants' claimed battery pack would not have resulted from the combined teachings thereof.

Further, there is nothing in the cited prior art that would lead one of ordinary skill in the art to make the modification suggested by the Examiner in the rejection of claims 13, 18, and 25 under 35 U.S.C. § 103(a) over TAKESHITA et al. in view of EHARA. Thus, the only reason to combine the teachings of TAKESHITA et al. and EHARA results from a review of Applicants' disclosure and the application of impermissible hindsight. Accordingly, the rejection of claims 13, 18, and 25 under 35 U.S.C. § 103(a) over TAKESHITA et al. in view of EHARA is improper for all the above reasons and withdrawal thereof is respectfully requested.

Applicants submit that dependent claims 17, 24, and 30 which are at least patentable due to their dependency from claims 13, 18, and 25 for the reasons noted above, recite additional features of the invention and are also separately patentable over the prior art of record based on the additionally recited features.

Claims 14-16, 21-23, and 27-29 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over TAKESHITA et al. in view of EHARA, and further in view of FUKUI (U.S. Patent Appl. Pub. No. 2004/0137314).

Initially, it is noted that claims 15, 22, and 28 have been canceled.

Applicants note that TAKESHITA et al. and EHARA fail to teach or suggest the subject matter claimed in amended independent claims 13, 18, and 25, as described above. Further, FUKUI also fails to teach or suggest a first connection bracket having an upright portion, a connection plate that contacts the upright portion and is arranged on the inner side wall of the end case, and an aperture in one side wall of the end case. Therefore, FUKUI fails to cure the deficiencies of TAKESHITA et al. and EHARA. Thus, for at least these reasons, even if the teachings of TAKESHITA et al., EHARA, and FUKUI were combined, as suggested by the Examiner, the claimed combination would not result. Moreover, there is nothing in the cited prior art that would lead one of ordinary skill in the art to make the modification suggested by the Examiner in the rejection of claims 14, 16, 21, 23, 27, and 29 under 35 U.S.C. § 103(a) over TAKESHITA et al. in view of EHARA and FUKUI. Thus, the only reason to combine the teachings of TAKESHITA et al., EHARA, and FUKUI results from a review of Applicants' disclosure and the application of impermissible hindsight. Accordingly, the rejection of claims 14, 16, 21, 23, 27, and 29 under 35 U.S.C. § 103(a) over TAKESHITA et al. in view of EHARA and FUKUI is improper for all the above reasons and withdrawal thereof is respectfully requested.

Claims 19 and 20 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over TAKESHITA et al. in view of EHARA, and further in view of IWAIZONO (U.S. Patent No. 6,524,739).

Applicants note that TAKESHITA et al. and EHARA fail to teach or suggest the subject matter claimed in amended independent claim 18, as described above. Further, IWAIZONO also fails to teach or suggest a first connection bracket having an upright portion, a connection plate that contacts the upright portion and is arranged on the inner side wall of the end case, and an aperture in

one side wall of the end case. Therefore, IWAIZONO fails to cure the deficiencies of TAKESHITA et al. and EHARA. Thus, for at least these reasons, even if the teachings of TAKESHITA et al., EHARA, and IWAIZONO were combined, as suggested by the Examiner, the claimed combination would not result. Moreover, there is nothing in the cited prior art that would lead one of ordinary skill in the art to make the modification suggested by the Examiner in the rejection of claims 19 and 20 under 35 U.S.C. § 103(a) over TAKESHITA et al. in view of EHARA and IWAIZONO. Thus, the only reason to combine the teachings of TAKESHITA et al., EHARA, and IWAIZONO results from a review of Applicants' disclosure and the application of impermissible hindsight. Accordingly, the rejection of claims 19 and 20 under 35 U.S.C. § 103(a) over TAKESHITA et al. in view of EHARA and IWAIZONO is improper for all the above reasons and withdrawal thereof is respectfully requested.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejections, and an early indication of the allowance of claims 13, 14, 16-21, 23-27, 29, and 30.

SUMMARY AND CONCLUSION

In view of the foregoing, it is submitted that the proposed amendment is proper for entry since it merely combines dependent claims 15, 22, and 28 with independent claims 13, 18, and 25, respectively, and which is an issue about which Applicant has already presented arguments, and it is also submitted that none of the references of record, considered alone or in any proper combination thereof, anticipate or render obvious Applicants' invention as recited in claims 13, 14, 16-21, 23-27, 29, and 30. The applied references of record have been discussed and distinguished, while significant claimed features of the present invention have been pointed out.

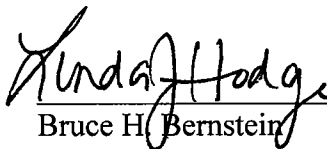
Accordingly, consideration of the present amendment, reconsideration of the outstanding Final Official Action, and allowance of the present amendment and all of the claims therein are respectfully requested and now believed to be appropriate.

Applicants have made a sincere effort to place the present application in condition for allowance and believe that they have now done so.

Any amendments to the claims which have been made in this amendment, which do not narrow the scope of the claims, and which have not been specifically noted to overcome a rejection based upon the prior art, should be considered cosmetic in nature, and to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to attach thereto.

Should there be any questions, the Examiner is invited to contact the undersigned at the below listed number.

Respectfully submitted,
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